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ABSTRACT

The guide is one in a series for teachers, students, and community members to help them utilize community resources in developing and teaching environmental concepts, responsibility, and problem solving. This particular guide focuses on social studies and language arts aspects of environmental education for sixth graders. Background information and activities are based on the Indian River County environment in Florida. An introduction explains that there are five forest types in the county, which is a scenic and recreation area. Ten major areas of environmental and human concern in the county include water pollution abatement, solid waste disposal, and rare and endangered habitats. Endangered and threatened wildlife are identified. Section one presents 13 social studies activities based on two major concepts: (1) as population increases, its effects on the environment change, and (2) although resources are finite, there are almost infinite demands on those resources. Activities involve creation and observation of terrarium life and simulation of different community members' water needs. Section II presents six language arts activities based on the concept that as population increases, its effects on the environment become more pronounced. Activities include calculation of birth and death rates, and writing poetry about ecology. A concluding section outlines Florida school regulations concerning educational field trips. (AV)

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INDIAN RIVER COUNTY

ENVIRONMENTAL EDUCATION INSTRUCTIONAL GUIDE

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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SO 011 046

LANGUAGE ARTS AND SOCIAL STUDIES
SIXTH GRADE

1975

INDIAN RIVER COUNTY
ENVIRONMENTAL EDUCATION PROGRAM

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ENVIRONMENTAL EDUCATION

INSTRUCTIONAL GUIDE

This publication serves as the teaching nucleus for Environmental Education activities in Sixth Grade. The development of this program is a joint effort of teachers and staff of the Indian River County Schools.

This Guide was developed by: Mrs. Barbara Riley - Indian River Middle School

The Introduction was written by Mr. Phil Parisi - Vero Beach Elementary School

We wish to thank the Title III, E.S.E.A. Lee County Environmental Education Project as the conceptual framework for the organization of the guides comes from their work. Also, some of the activities in this guide are from their Interdisciplinary Concepts and Activities Guides.

This publication is one in a series developed by the Environmental Education Program for Indian River County Schools. This series is designed to be used by teachers, students and community members to help them to utilize community resources in developing and teaching environmental concepts, responsibility and in seeking ways to solve environmental problems. All materials are in pilot form and may be revised.

The work presented or reported herein was performed pursuant to a grant from the State Department of Education, Office of Environmental Education.

INTRODUCTION

ABOUT THE ENVIRONMENT

The environment is perhaps the most important complex of systems for man. Yet it is perhaps the most abused. It is becoming trite to say this, but none the less true--unless we change our ways, we will die.

Throughout history men have been able to change. They have done this with much pain and toil. The responsibility of this change has in the past rested on certain individual leaders. Today these leaders must reach a wide population and they must reach them at a time when habits are forming. The teachers of today are the leaders who must take up the cause of educating future populations about the delicate balance we live in.

It seems strange that many peoples of the world (American Indians, for one) need no formal or separate environmental education program for their young. Indian children grow up with the notion that the universe and the environment is one living thing. It must be respected and revered as something sacred. But somehow, modern man has lost vision of that simple concept, if indeed he ever possessed it. Environmental education is a way we can regain a respect that seems to come natural to some populations. It is a way we can be fit for survival and for prevailing on Earth.

In the year 2006, the earth will have doubled the present number of people. Within just 35 years another 3 billion people will be competing for the world's already taxed resources. This is not a problem of future generations, but an existing one that you and your students are already witnessing. As the population soars, crime rates, suicides, and psychological disorders increase at disproportional rates. More species are constantly being added to the endangered species lists, and more wilderness areas are continually being infringed upon by development. Our soil is lost at an alarming rate as it, with a heavy load of fertilizer, is being washed by rains into our precious water supplies.

INTRODUCTION

ABOUT ENVIRONMENTAL EDUCATION

There doesn't appear to be any part of this planet that is not affected by man's hand. Distributing the world's limited resources and minimizing the damage to our planet is going to be difficult. The dilemma is not going to be the problem of any one discipline area; rather, it will touch each of us, in all phases of our lives. Maintaining a quality of life will necessitate new directions in our literature, economics, psychology, food choices, engineering, and even in our daily lives.

Attaining environmental quality is everyone's responsibility, and, as such, it is going to require knowledge on the part of all our citizens. If our students are to make intelligent choices they will feel comfortable living with, they are going to need you to provide them with much of the background information they will need. Our environmental problems demand our attention in every phase of the curriculum so that our students can be prepared to solve this enigma.

Three themes or stages in educating a student to prepare him for environmental choices are: 1) awareness of the environment; 2) knowledge of the environment; and 3) action in the sense of effecting a solution.

Predicting the experiences and knowledge students will need in the future is always a difficult task. However, a few basics are readily identifiable. It seems logical to assume that a person cannot make intelligent decisions if he is not aware of the problem, or even the existence of the area that has the problem. Next, it is important that he understands or has some basic knowledge about the stressed area and the stress factors involved. Finally, once an individual is aware of a problem and has knowledge about it, he must have the tools to effect a solution for the problem.

We have targeted awarenesses at the primary and lower intermediate grades, knowledge at the upper intermediate and middle school level, and action begins in

the upper middle school running through the high school and into the adult community.

The K-9 curriculum guides compiled by various environmentalists are organized around several basic conceptual schemes that were felt to be necessary for a working knowledge of the environment. In addition,these schemes and the activities suggested for their illustration, have been applied as much as possible to the unique problems of Indian River County.

A FINAL NOTE

Education about the environment can too easily become merely an academic exercise, rather than vital interaction. Many researchers have shown that the discovery method of learning allows a more thorough and lasting attainment of the desired principles and it heightens motivation at the same time. The discovery method provides an individual experience and allows success for a wide ability range of students, because it is discovering new knowledge at each student's own particular level.

Your role in the environmental education campaign is important for the student's ability to perceive the subtleties of nature will often depend on your guidance. Most often this is not done through telling the student the names of everything he sees. We need to guide him to the relationships and beauties rather than tell him about it. The student will be eternally grateful to the teacher who helps him observe the natural wonders he encounters. He will long remember the first time he saw a beautiful bird or had someone help him closely examine a delicate wildflower. If we ask him guiding questions which lead him to make his own discoveries we are doing him the greatest service a teacher can do; we are leading the person to the knowledge about using his own brain. We are showing him how to use his capacities of reason and understanding and enjoyment.

INDIAN RIVER COUNTY RESOURCES

The Florida Division of Forestry survey of 1971 showed 44.4 thousand acres of forest land in Indian River County. This report rated the land's most valuable asset as a scenic and recreation amenity. Forestland is also a favorable modifier of the increasingly contaminated environment caused by increased population growth, urbanization, and industrialization and provides relief from crowded city living.

There are five forest types. They are listed here from largest acreage to smallest.

1. Pine flatwoods, characterized by open stand of slash pine mingled with an understory of scrub palmetto and grass.
2. Hardwood and cypress swamps--include tupelo, black gum, sweet gum, some of the oaks singly or in combination, and often associated with willow, ash, elm, water hickory and maple. The soil here is rich.
3. Sand pine scrub--found on higher, drier ridges, principally on St. Lucie sands.
4. Mixed pine hardwood--found in the transition zones along major streams and drainage between the bottomland hardwood swamps and the pine flatwoods. This is a mixture of longleaf and slash pine, associated with willow oak, live oak, sweet gum and hickory.
5. Mangrove forest--along the costal islands and tidal flats, consisting of red and black mangrove in dense thickets along partially submerged lands subject to periodic wash by high tides and brackish estuarine waters.

The importance of natural hardwood, swamps, and wetlands as a natural filter should not be overlooked. Repeated studies and experience elsewhere show that

water delivered through natural drainage tends to improve in quality through the process of self-purification as it flows through and into the forest floor--that spongy, natural filter made up of debris, leaves and partially decayed vegetative duff. Water drained out of any watershed by canal will not show the improved quality of this naturally filtered product.

Although the hardwood and cypress swamps (consisting of a little over 10,000 acres of forested land) remained largely intact in this area for many years, they have been abused by over-cutting, promiscuous burning, over-grazing, and draining, all of which detract from their usefulness as a natural filter. Since 1970 drastic reductions of the hardwood Cypress community has occurred by the drainage of large areas of marsh for citrus production.

The value of mangrove forests to the marine ecosystem is well known. According to the distinguished ecologist, Dr. E. P. Odum of the University of Georgia, this interaction of land, sea, air and sunlight provides some of the richest food-producing areas in the world--20 times as productive per unit as the open sea, seven times as productive as an alfalfa field, and twice as productive as a field of corn!! Efforts should be continued to preserve the existing mangrove along the Indian River and expand it to the barren islands capable of supporting this growth. Some preliminary efforts at seed collection and restablishment are going on here and elsewhere in the state where this problem exists.

The Pelican Island Audubon Society has listed the ten major areas of Environmental and Human Concern in Indian River County. That list follows.

Areas of Environmental and Human Concern

1. Preservation and Protection of The Indian River Estuary, Including:

    a. Red and Black Mangrove swamplands
    b. Batis (pickleweed) marsh
    c. Submerged marine grass beds
    d. Spoil Islands
    e. Marshland functions
        (1) Marine productivity
        (2) Hurricane and storm protection
        (3) Wildlife feeding and nesting habitat
        (4) Pollutant filtration
        (5) Aesthetic values

2. Water Resources

    a. Shallow well aquifer
    b. Floridan aquifer
    c. Protection of recharge areas
    d. St. Johns River headwater marshlands

3. Water Pollution Abatement

    a. Sewage treatment plants
    b. Septic tanks and drainfields
    c. Canals and ditches
    d. Lakes, ponds, borrow pits
    e. Agricultural runoff
    f. Urban runoff
    g. Public health
    h. Tertiary treatment, land-spraying
    i. Sand-mining operations

4. Solid Waste Disposal

    a. Sanitary land fills
    b. Recycling
    c. Littering

5. Dune and Beach Protection and Restoration

6. Rare and Endangered Habitats

    a. Parklands
    b. Coastal forest hammocks
    c. Sand pine community
    d. Pine-flatwood community
    e. Freshwater marsh community

7. Noise Pollution

8. Air Pollution

9. Growth and Development Impact

    a. Environmental
    b. Economic
    c. Social

10. Development of Land-Use Policies and Ethics

Endangered and Threatened Wildlife in Indian River County

Endangered - Wildlife in this category are in danger of disappearing unless steps are taken to prevent this.

Birds: Wood Stork - A wetland inhabitant in marshes and water impoundments. In recent years 100-200 pairs have been nesting annually on Pelican Island.

Florida Everglade Kite - Not more than 100-150 of these freshwater marsh inhabiting birds survive in Florida. Several pairs have been found each spring in the St. Johns Water Management District reservoir west of Vero Beach, but overdrainage of this reservoir and subsequent loss of the Apple Snail--its sole food--has caused nesting failures.

Red-cockaded Woodpecker - Less than a half dozen birds occur in Indian River County, in a strip of Slash Pine forest along the upper reaches of the Sebastian River, southwest of Roseland. This species is dependent upon pines that have a fungus disease of the heartwood in which they excavate their nesting and roosting cavities.

Mammals: Florida Panther - Possibly one or two pairs of this rare carnivore, sometimes called a puma, or cougar, remain precariously in the wilder parts of Indian River County.

Manatee - Each winter several manatees are seen in the Indian River, especially in the warmer waters of the lagoon and canal near Vista Harbors and the outfall canal of the Vero Beach power plant. They are particularly vulnerable to injury by outboard motor propellers.

Reptiles: American Crocodile - This reptile is usually found only along the coastal areas of south Florida and the keys, but a large 15-foot crocodile was found in 1974 in a pond at Vista Royale south of Vero Beach.

Atlantic Green Turtle - each year several females of this species come ashore to lay eggs on the beach.

Atlantic Saltmarsh Snake - one of the few snakes found in salt water. It is a harmless water snake and may be found inhabiting mosquito control impoundments on both sides of the Indian River.

Threatened - Wildlife not in imminent danger of extinction, but could become endangered if conditions worsen.

Birds: Brown Pelican - Indian River County probably has the largest concentration of Brown Pelicans in North America. Outside of Florida pesticides have seriously affected this species reproduction.

Magnificent Frigatebird - Occasionally seen over the Indian River and the beach and at Pelican Island. Considered threatened because its only nesting area in North America is on the Marquesas Keys near Key West.

Reddish Egret - One or two individuals are seen each year in the Indian River and at Sebastian Inlet. The last species to recover from the slaughter of the plume trade days.

Roseate Spoonbill - Several dozen or more of this species visit Indian River Cojnty during the spring and summer. Occasionally seen in larger drainage canals west of Vero Beach.

Osprey - Several breeding pairs found along the Indian River and at Blue Cypress Lake. More numerous in winter when northern birds are present.

Caracara - Only around 250 estimated to remain in Florida. One or two are sometimes seen in ranch areas in western parts of the county.

American Oystercatcher - Two, possibly three pairs nest on spoil islands in Indian River. Very intolerant of human disturbance.

Least Tern - Our smallest tern, here in summer only and often seen fishing in the surf. Dependent upon spoil islands and sand spits for nesting sites.

Florida Scrub Jay - Probably less than a dozen pairs remain in Indian River County in Sandpine-scrub oak communities near Donald MacDonald Park, Winter Beach-Gifford area along Old Dixie, and Whispering Palms area, south of Vero Beach. Dependent upon undisturbed scrub habitat.

Mammals: Florida Mouse - Found only in sandpine-scrub habitat on the Florida ridge.

Florida Beach Mouse - Although relatively common farther north, the destruction of beach dune vegetation in Indian River County has greatly reduced the numbers of this tiny, pale-brown mouse.

Round-tailed Muskrat - Found in freshwater marshes, but few remain in Indian River County because of overdrainage.

Reptiles: Gopher Tortoise - Although still frequently seen in our area, the destruction of Sandpine and Slash Pine Flatwoods habitat has greatly reduced their numbers.

Atlantic Loggerhead Turtle - Several hundred females nest each year on Indian River County beaches, but successful hatching is low because of predation by raccoons, disturbance by people and excessive beach erosion where man-made structures are too close to the beach.

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As population increases, its effects on the environment changes.

Concept A 1

Species and environmental factors interact to keep animal populations in balance in the community.

Concept B 2

The requirement for space by some animal species is an inherited behavior pattern and often causes space to become a limiting factor in their ecosystem.

Concept C 4

As man's population increases, most forms of pollution usually increase also.

Concept D 6

In South Florida, water may be the limiting factor to man's population.

For life to continue, we need water. We could nver exist without our water supply.

Conceptual Scheme II 7

We live in a world of finite resources and almost infinite demands on those resources.

Concept A 7

Man must have water to survive and thus, he should use that resource wisely.

Concept B 11

There is no continual input of new matter. In order for life to continue, basic matter must be recycled. Recycling of resources is the best way to keep from running out of resources.

Language Arts

Conceptual Scheme I 15

As population increases, its effects on the environment become more pronounced.

Concept A 15

Population increase or decrease may be calculated as the difference between birth rate and immigration, and death rate and emigration.

Concept B 16

Man's need for food, fiber and minerals increases as populations expand and levels of consumption rise.

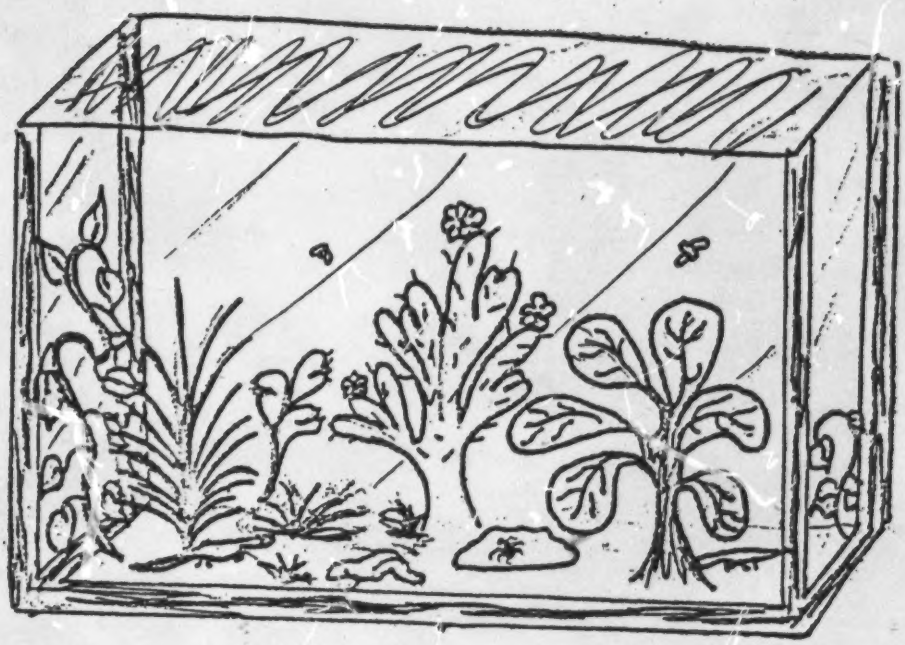
Bibliography
Appendix

GRADE SIX

SOCIAL STUDIES

CONCEPTUAL SCHEME I

CONCEPT A ACTIVITY I



CLASSROOM TERRARIUM

CONCEPTUAL SCHEME I

AS POPULATION INCREASES, ITS EFFECTS ON THE ENVIRONMENT BECOME MORE PRONOUNCED.

Concept A

Species and environmental factors interact to keep animal populations in balance in the community.

Activity 1

Have students set up and develop a terrarium in the classroom. A terrarium may be made from a 10 gallon or larger fish aquarium with a piece of plywood or glass used to cover the top. Have students collect different plants and insects to go into the terrarium. Include insects such as spiders, houseflies, grasshoppers, etc., in the terrarium. Among the different types of plants such as ferns, succulants, and ivy include a venus fly trap.

Have students observe and record interaction of the animals. Additions may be needed to maintain a balanced community.

How did the animals interact to keep their populations in balance?

What environmental factors affected the balance of the population?

Activity 2

Show the film "Balance in Nature," Indian River County Instructional Media Center No. 2.141.

Scheme I - A

Activity 2 (cont.)

Follow through with the film by having students list some plants, animals and insects that help balance out nature. List these on the board so others may be added later.

Concept B

The requirement for space by some animal species is an inherited behavior pattern and often causes space to become a limiting factor in their ecosystem.

Activity 1

Have the students research territoriality in animals.

Why do animals need a territory?

Name some species of animals which have territories.

If an environment had all of its territories filled, what would happen to new animals that moved into the area?

Have some students bring in three of our common local skinks. Place all three of them in your class terrarium you used for the earlier experiment. The skinks should fight. If they don't, place one of the skinks in a terrarium for three days and then introduce two new skinks.

Have class discuss what happened and why.

How big is a skink's territory when it is in the wild? Do you think they would define their territory there, too?

How do young skinks keep from getting killed by the older and stronger skinks as they wander around?

What is the advantage in this territorial mechanism?

CONCEPT B

The requirement for space by some animal species is an inherited behavior pattern.

Scheme I - B

Activity 1 (cont.)

This activity may be changed by using a fish aquarium and substituting different types of tropical or goldfish.

What happens to the fish?

Do some fish chase others around, sometimes nipping at them?

What happens to the baby fish when born into the aquarium?

Do you have a territory? How big is it? Why do you have it?

Activity 2 - Independent Observation

Have students make an observation of how people react to their own territories.

Observe fellow students on how they act about their own desk, lockers and classrooms.

Observe family and friends on how they act about their neighborhood, homes and bedrooms.

Notice people in restaurants and cafeterias on how they react once they put their trays down or someone places their food down.

People react in many ways as wild animals do. Once they have their own territory, they too don't like to give it up.

Concept C

As man's population increases, most forms of pollution usually increase also.

Activity 1

To demonstrate this concept, divide the class into the

Scheme I - C

Activity 1 (cont.)

following groups, or as close to these as possible:

Group A - 1 student; Group B - 2 students;

Group C - 4 students; Group D - 8 students;

Group E - 16 students.

Obtain a large plastic garbage bag for each group. Label each bag with its group letter. For a period of one week each student should try to keep all his trash and place it in his group bag. (You may need a few extra bags, especially for groups D and E.)

At the end of the week, weigh each bag and record the results on the chalkboard.

Which group produced the most waste?

Which group had the least waste?

If each person in the group represented 2,000 people, how much waste would have been produced by each group?

Do you think a small city produces as much waste as a large city? (No, the small city does not produce as much.)

Can you think of solutions to the waste problem?

Activity 2

A good follow-up activity to this is to take a day with the class to collect trash around the community and beaches. This will prove to be very helpful to the community by picking up trash and may also prove to be profitable by saving aluminum drink cans for sale.

Scheme I - D

Concept D

In South Florida, water may be the limiting factor to man's population.

For life to continue, we need water. We could never exist without our water supply.

Activity 1

Have the students explore water areas in the community. Some examples of these could be small lakes and ponds, beaches and the Indian River. Students may report on these waters' conditions. Actual photographs and water samples would add interest to the project. Title a classroom bulletin board for this project to show the students' findings.

Activity 2

Have a speaker from the city water plant hold a discussion of the quantity and quality of water in South Florida.

Activity 3

Plan and take a field trip to the City Water Plant and/or to other plants in other communities. (For field trip procedures refer to Appendix.)

For added information about water pollution for teacher and students, write for the pamphlet "Water Pollution Control in Florida." Address: Department of Environmental Regulation Tallahassee, Florida, 32304.

CONCEPTUAL SCHEME II

WE LIVE IN A WORLD OF FINITE RESOURCES AND ALMOST INFINITE DEMANDS ON THOSE RESOURCES.

Concept A

Man must have water to survive and thus, he should use that resource wisely.

Activity 1

Divide the class into the following groups to represent some of the interests that use water: 10 homeowners; 5 motel owners; 3 restaurant owners; 1 car-wash owner; 1 drug store

Scheme II - A

Activity 1 (cont.)

owner; 2 department store owners; 1 school principal; 1 marina owner; 2 gas station owners; and 1 factory owner (if there are more than 27 students, add homeowners; if there are less than 27 students, appoint fewer homeowners and motel owners).

The activity: Cut thirty 3 x 5 file cards into fourths. Place these pieces in a shoebox or some other container. This container with its cards becomes the city's lake. Label this box "City Lake and Water Supply." Label another box "Sewage Treatment Plant" and a third box should be labeled "Evaporation."

Once the cards and boxes are prepared and the students know what kind of business or interest they represent, the class is ready to proceed with the activity.

Establish the following rules: (1) All water used by the interests in the city comes from the "City Lake and Water Supply." (2) Each piece of card in the "Lake" is equal to one water unit. (3) Each interest uses the following numbers of water units per year (place this on the chalkboard).

INTERESTS	WATER UNITS USED PER YEAR
Homeowners	1
Motel owners	3
Restaurant owners	2
Car-wash owners	4
Drug store owners	3
Department store owners	3
School principal	4
Marina owner	2

Scheme II - A

Activity 1 (cont.)

INTERESTS	WATER UNITS USED PER YEAR
Gas station owners	3
Factory owner	4

(4) Three-fourths of the water used each year ends up in the "Sewage Treatment Plant" after it has been used by the city interests. (5) One-fourth of the water used each year is lost either by evaporation or in the products produced by the city. (6) Three-fourths of the water in the "Sewage Treatment Plant" is dumped back into the lake to be re-used, the other one-fourth evaporates. (The teacher should take care of the "Sewage Treatment", "Evaporation", and "Lake" boxes.) (7) Homeowners always get their water last.

Now proceed through one year's water use plan. Each person should remove the number of water units they use per year.

The water units should now be sent to the "Sewage Treatment" box and the "Evaporation" box. For example, a homeowner had removed 1 water unit from the lake. He must divide this 1 water unit into four equal parts. Three-fourths of his water unit goes into the "Sewage Treatment" box and one-fourth of the water goes into the "Evaporation" box. A second example could be the factory owner taking 4 water units from the "Lake". He sends 3 of these to the "Sewage Treatment Plant" and 1 to the "Evaporation" box.

After each student has placed his used water units in the proper boxes, the teacher should remove three-fourths of the

Scheme II - A

Activity 1 (cont.)

water units from the "Sewage Treatment Plant" and place them in the "Lake". The other one-fourth from the "Sewage Treatment Plant" should be placed in the "Evaporation" box.

Now the teacher should take 1/10 of the units from the "Evaporation" box and dump them back into the lake as rain. (When doing this, round off the number to the nearest tenth. Thus, with a class of 27 students, there should be 23 1/4 units left in the "Evaporation" box at the end of one go around. These units are lost as rain to other areas around the city.)

Now establish some changes in the city.

(1) The population of children increases so that the school becomes twice as large, thus now it uses twice as much water. More cars are in the city so gas stations are car washes use twice as much water. The marina increases business so it uses 3 times as much water. Tourists increase in number so the motels use 3 times as much water and the restaurants also use 3 times as much water. The drug store and department stores are doing more business so they also use twice as much water. The factory has to supply more goods to the department store so it uses 3 times as much water.

Now let each interest take their water units for this new year. Remember homeowners go last.

Scheme II - A

Activity 1 (cont.)

Discussion:

Was there enough water to go around? (No)

Who suffered most from lack of water? (Homeowners mainly)

During which year did the city interest make more money:
year 1 or year 2? (year 2)

During which year did the city interests use more water:
year 1 or year 2? (year 2)

During which year did the homeowners use more water?
(Neither year, they used the same amount both years.)

Without water, what will happen to the business interests?
(They will go out of business.)

Do you think the city could survive at the water usage levels of the first year? (Yes, but not forever. More water is lost than is returned to the lake, so eventually the lake will not support the city.)

Should the city look for another source of water? (Yes)

How could the city conserve water?

Concept B

There is no continual input of new matter. In order for life to continue, basic matter must be recycled. Recycling of resources is the best way to keep from running out of resources.

Activity 1

Students should find articles, pictures or models of objects, which can be recycled. For example: trash into

Scheme II - B

Activity 1 (cont.)

glass tubing and building tiles; cans into reprocessed tin and aluminum; used newspapers into clean newsprint; etc. Make a bulletin board or scale model of the things students find. Discuss recycling.

Why does society need to recycle basic matter?

How can we encourage people to help with recycling?

(Returning deposit bottles and cans for example)

Activity 2

During one week of time, have each student observe how much garbage (in bags) is accumulated in his or her own home. Find out how much garbage was used in the homes of the students. Ask how many things thrown away could be recycled.

Activity 3

Have students try some problem solving conerning the problem of waste. Have them write down their own solution to the following problem.

1. You have five tons of solid waste to get rid of.
2. The law says you cannot burn it in the open because it will cause air pollution.
3. Land is expensive and landfill is almost gone.
4. You must get rid of it. It is decaying. Rats and mice will start to live in it. It may cause people to become ill.
5. What do you do about it?

Send your solutions to Eco-News, 235 East 49th Street, New York, New York 10017. They will try to print your solutions in the Eco-News Newsletter and they will pass on your suggestions to people trying to solve the problem.

GRADE SIX
LANGUAGE ARTS

CONCEPTUAL SCHEME I

AS POPULATION INCREASES, ITS EFFECTS ON THE ENVIRONMENT BECOME MORE PRONOUNCED.

Concept A

Population increase or decrease may be calculated as the difference between birth rate and immigration, and death rate and emigration.

Activity 1

Discuss the terms found in the concept with your students.

1. Birth rate - the number of organisms born per unit of time. The number of children born in Indian River County in 1964 would indicate the birth rate for Indian River County in 1964.
2. Death rate - the number of organisms that die per unit of time. The number of people who died in 1964 would indicate the death rate in Indian River County.
3. Immigration - the movement of organisms into an area. The people who move to Indian River County to live.
4. Emigration - the movement of organisms out of an area. The people who move out of Indian River County.

Ask students for examples of each of these terms; then ask them what would happen to Indian River County if the death rate decreased and immigration increased. (The population would increase)

Ask: What are some dangers in overpopulation? (Increased pollution, lower standard of living, crowding, accident and crime rate go up, taxes increase, slums, etc.)

In order for a population to remain stable, the birth and death rates must be equal. How would the following things affect

Scheme I - A

Activity 1 - (cont.)

the population of the town?

(a) The Family Planning Council encourages couples to have planned pregnancies. (If each couple had only 2 children, this would result in less than zero population growth and a stabilization of the growth rate.)

(b) A new maternity unit is added to the hospital to handle special emergencies and provide better care for mothers and newborns. (Decreased infant mortality and maternal death due to delivery will cause a rise in the population rate.)

(c) A drug is discovered that will cure many forms of each detected cancer. (Once again medicine devises a way to reduce the death rate. Unless comparable steps are taken to reduce the birth rate, a population increase will occur.)

You may also want to consider other types of populations; animals, insects, etc.

Concept B

Man's need for food, fiber and minerals increases as populations expand and levels of consumption rise.

Activity 1

Divide the class into 3 large groups. Each group will be responsible for producing a mural display. One group should show the kinds of foods, clothing, tools, and manufactured goods that were used by the settlers of Jamestown about 400 years ago. The

Scheme I - B

Activity 1 - (Cont.)

second group will show what the typical American eats, wears and uses today. The third set of students should try to show what things will be eaten, worn and used 400 years in the future.

Discuss the amounts of materials needed to produce clothing items and manufactured goods during each period of time.

Discuss the amount of land necessary to produce food for all the people during each of the ages studied.

During which age did people make the least demands on their environment? (Probably during the Jamestown era, but perhaps future cultures will learn from our failures.)

Activity 2 - Writing

Have each student write a letter (which may not be mailed) to the President expressing a concern on a population, environmental, and ecological matter. After everyone is finished, the teacher will read each letter and ask students for help in solving the problems which were written about. This problem solving may be done with the entire class or a student representative board may be made up of only several students.

Activity 3

Read some favorite nature poems by poets such as Coleridge, Wordsworth, Shelly, Emerson, and Thoreau who help contribute so much to alter man's accepted values about nature. This activity will help motivate students for activity 4.

Scheme I - B

Activity 4

Write poems concerning the trouble with our ecology, population, etc., problems. Devise a bulletin board that looks like a forest of trees - place poems inside the top part of trees to be viewed. Have new poems written for the "Poetry Forest" every one or two weeks.

Activity 5

Have each student find a picture from a magazine to cut out, on animals, nature, environment, etc. Have each student put the picture on a piece of colorful construction paper and then have them write a haiku poem about the picture on the paper. These are nice to display on bulletin boards or a mobile.

Bibliography

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Sherman, Anthony C., Our Wounded Land, Pendulum Press, Inc., West Haven, Connecticut, 1971.

Sorvall, Vivian, Our Troubled Waters, Pendulum Press, Inc., West Haven, Connecticut, 1973.

Watson, Geoffrey G., Fun With Ecology, Winchester Press, New York, 1971.

Eco-News - A Young Peoples Environmental Newsletter, Vol. 5, No. 5, "Where Does All the Garbage Go?" New York, New York, January, 1975.

6GX31 - 6.12 EDUCATIONAL FIELD TRIPS AND EXTRA-CURRICULAR TRIPS.

(1) Special school trips shall be classified as follows:

(a) Educational field trips. Any trip which is directly related to a unit of instruction being studied by a particular group of pupils shall be considered an educational field trip when it occurs during the school hours, or attendance is required, or the grade of the student is influenced by participation in the activity.

(b) Extra-curricular trips. A trip which is not directly related to the instructional program but which is related to a school sponsored activity shall be considered to be an extra-curricular trip.

(2) Approval of trips.

(a) There shall be developed within each school a program of field trips suitable to each grade level so that there will be a variety of experiences.

(b) A list of suitable educational trips, prepared at intervals by the instructional staff and approved by the superintendent, shall be distributed to all schools. The principal shall obtain the approval of the superintendent for any educational trip not on the approved list. The list shall show educational field trips and extra-curricular trips separately.

(c) The teacher shall submit plans for a trip to the principal for approval who in turn shall submit such plans to the superintendent for final approval at least five (5) days prior to the date of the planned trip.

(3) Parental permission. Written permission of the parent or

guardian shall be required for any pupil who goes on an educational or extra-curricular trip unless the student has attained eighteen years of age. Written permission shall be provided for each trip except for the activities approved by the Florida High School Activities Association.

(4) Nonparticipants. Proper arrangements shall be made for any pupil or pupils who do not go on a planned field trip.

(5) Costs. No charge may be made to a pupil for the cost of an educational field trip. Charges shall be made to the school as provided in Rule 8.13.

(6) Transportation for field trips.

(a) The use of a school bus will be allowed for educational trips after proper arrangements have been made. The provisions of Section 8.13 of these regulations shall apply to all educational field trips.

(b) Trips shall be planned so that the use of the school bus will not interfere with the normal school transportation pattern.

(c) The use of private automobiles for educational and extra-curricular trips is discouraged; but if approved, liability and medical insurance in the amounts required by law shall be mandatory. Any driver shall be an adult and shall hold a valid Florida driver's license. The teacher-sponsor shall see that the provisions of this rule are carried out.

(d) There shall be a non-student adult chaperone in each vehicle. When practical, the chaperone shall be a member of the administrative or instructional staff. The driver of a school bus shall not be considered a chaperone.

(7) No educational field trips may be made during the last two weeks of any school year except by special approval of the superintendent.

Authority: 230.23(7),F.S. Implemented: 230.23(8); 230.33(10),F.S.